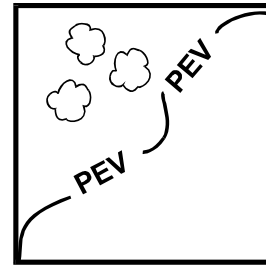
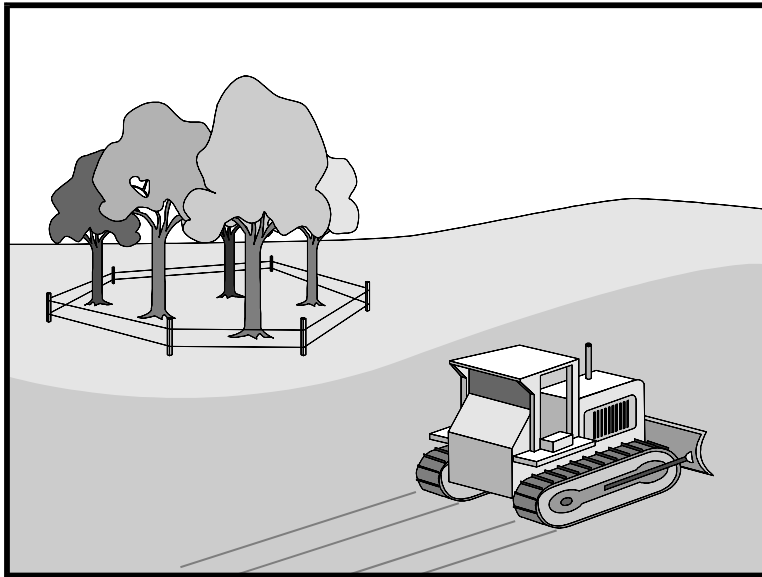


Preservation of Existing Vegetation



BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water

Definition and Purpose Preservation of existing vegetation is the process of identifying and protecting desirable vegetation in any areas subject to land-disturbing activities.

The primary function of preservation of existing vegetation is to maintain an effective form of erosion (soil stabilization) and sediment control, as well as watershed protection, landscape beautification, dust control, pollution control, and shade.

Appropriate Applications This technique is applicable to all types of sites. Areas where preserving vegetation can be particularly beneficial are floodplains, wetlands, streambanks, steep slopes, and other areas where erosion control would be difficult to establish, install, and maintain, or areas where there are critical resources downstream.

Preservation of existing vegetation should be practiced in the following locations:

- Areas on a site where no construction activity is planned or will occur at a later date
- Sensitive areas where natural vegetation exists and should be preserved, such as on steep slopes, watercourses, and building sites in wooded areas
- Within and as a buffer to areas where federal, state, or local government regulations require preservation, such as delineated wetlands, vernal pools, marshes, etc.

Limitations Protection of existing vegetation requires planning, and may constrict the area available for construction activities. Additionally, if land costs are high, it may not be practical to preserve areas of existing vegetation for a given project unless

Preservation of Existing Vegetation

required by regulation. In this case, it may be appropriate to evaluate the existing vegetation for species type for re-vegetation in landscaping plans.

Design Guidance

- Preservation of vegetation on a site should be planned before any site disturbance begins. Preservation requires good site management to minimize the impact of construction activities on existing vegetation, which may adversely affect their growth.

Planning

The following planning steps should be taken to preserve existing vegetation:

- Decisions on which vegetation to save should be based on the following considerations:
 - Life expectancy and present age of vegetation
 - Health and disease susceptibility
 - Aesthetic values
 - Comfort relative to site temperature variations and wind
 - Wildlife benefits
 - Adaptability to the proposed project
 - Survival needs of the vegetation (i.e. whether this vegetation is at risk of extinction)
 - Relationship to other vegetation, (i.e. whether this vegetation supports the existence of the surrounding vegetation)
- Review existing vegetation in early spring to identify seasonal plant species.
- All vegetation to be retained should be identified and delineated in the contract documents and marked in the field prior to the start of adjacent soil disturbing activities.
- Critical areas, such as floodplains, steep slopes, and wetlands, should be left in their natural condition unless disturbance is unavoidable.
- Minimize disturbed areas by locating temporary roadways and roadways to be used by maintenance, to avoid stands of trees and shrubs, and to follow existing contours to reduce cutting and filling.
- Locate multiple utilities in the same trench to minimize trenching. Excavations should be outside the drip line of trees.
- Plans for tree preservation should:
 - Avoid compaction of the soil within the drip line of a tree that can block off air and water from the roots. Therefore, construction material

Preservation of Existing Vegetation

storage and crew and vehicle paths should be noted on the site plan and located where they will not cause root compaction, and to avoid nicking or scarring of the tree trunk.

- Maintain the grade around vegetation to be preserved – raising the grade can suffocate roots, and lowering the grade may expose roots. In paved areas, there should be at least 1.5 m (5 ft) of ungraded ground beyond the drip line.
 - Avoid changes in soil chemistry that can result from refuse of chemicals deposited on the soil surface.
 - Soil stabilization measures should be located at the limits of clearing to prevent sediment deposition within the area where vegetation is being preserved.
- When removing vegetation, consider impacts (such as increased exposure to rain and wind damage) to the adjacent vegetation that will be preserved.

Tree and Vegetation Marking and Protection

- During a pre-construction conference, vegetation preservation and protection measures for that project should be reviewed with the contractor and any subcontractors.
- Responsibility for removal of all vegetation protection devices should be clearly identified as the Contractors.
- Several types of protective devices may be used, and all personnel should be instructed to honor these devices. Within 12 m (40 ft) of a proposed building or excavation, however, retained trees should be protected by fencing. The following are alternatives for tree and vegetation protection:
 - A standard snow fence on steel posts set 1.8 m (6 ft) apart and at a height of 1 m (3 ft), may be placed at clearing limits.
 - Plastic fencing of 1 m (3 ft) wide orange polypropylene webbing that is fully stabilized against ultraviolet light, with openings not larger than 50 mm by 50 mm, shall be used at clearing limits. The fence posts shall be either wood or metal at the Contractor's option and shall be suitable for the purpose intended. The posts spacing and depth shall be adequate to completely support the fence in an upright position.
 - An earth berm may be constructed according to specifications, but only if its presence does not conflict with drainage patterns. The base of the berm on the tree or vegetation side shall be located at the clearing limits.

Preservation of Existing Vegetation

- Additional trees between the trunks of retained trees and the clearing limits may be left standing as protection. Trees in this buffer zone should be a maximum of 1.8 m (6 ft) apart so that equipment and material cannot pass. These trees should be re-examined before construction is completed to check for and ensure survival or be removed.

Grade Protection

- If the ground level must be raised around an existing tree or tree group, a tree well can be constructed. A professional arborist should be consulted if a tree well appears to be warranted or desired. A well may be created around the tree slightly beyond the drip line to retain the natural soil in the area of the feeder roots.
- If the grade is being lowered, trees can be protected by constructing a surrounding wall of large stones, brick, or block, and backfilled. Fertilizer and water should be applied thoroughly and drainage provided so that water does not accumulate.
- It is best to perform the construction activities in the tree's vicinity during the tree's dormant period.
- If necessary, a tree wall shall be constructed using the following procedures:
 - Remove vegetation and organic matter from beneath the retained tree(s) to at least 1 m (3 ft) beyond the drip line, loosening the soil to at least 75 mm (3 in) in depth without damaging roots.
 - Apply fertilizer to the root area according to label instructions.
 - Construct a dry well to allow for trunk growth. Provide 300 mm (12 in) between the trunk and the wall for older, slow-growing trees, and 600 mm (24 in) for younger trees.
 - The well should be just above the level of the proposed fill, and the wall should taper away from the trunk by 80 mm/m (1 in/ft) of wall.
 - The well wall should be constructed of large stone, brick, building tile, concrete blocks, or cinder blocks, with openings left in the wall for the flow of air and water. Mortar should be used only near the top of the well and above the porous fill.
 - Drain lines beginning at the lowest point inside the well should be built extending outward from the trunk in a radial pattern with the trunk as the hub. They should be made of 100 mm (4 in), high-quality drain tiles, sloping away from the well at a rate of 10 mm/m (0.125 in/ft). A circumferential line of tiles should be located beneath the drip line; vertical tiles or pipes should be placed over the intersections of

Preservation of Existing Vegetation

the two tile systems for fills greater than 600 mm (24 in) in depth, held in place with stone fill. All tile joints should be tight. Drainage may be improved by extending a few radial tiles beyond each intersection and slope sharply downward. Coarse gravel may be substituted for tile in areas where water drainage is not a problem. Stones, crushed rock, and gravel may be added instead of vertical tiles or pipes, so the upper level of these porous materials slopes toward the surface near the drip line.

- Tar paper or an approved equivalent should be placed over the tile or pipe joint to prevent clogging, and a large stone placed around and over drain tiles or pipes for protection.
- Layer 50 mm (2 in) to 150 mm (6 in) of stone over the entire area under the tree from the well outward at least to the drip line. For fills up to 600 mm (24 in) deep, a layer 200 mm (8 in) to 300 mm (12 in) should be adequate. Deeper fills require thicker layers of stone to be built to a maximum of 750 mm (30 in).
- A layer of 20 mm (0.75 in) to 25 mm (1 in) stone covered by straw, fiberglass mat, or filter fabric should be used to prevent soil clogging between stones. Do not use cinders as fill material.
- Complete filling with porous soil (to sustain vegetation) until the desired grade is reached.
- Crushed stone should be placed inside the dry well over the openings of the radial tiles to prevent clogging of the drain lines. Vertical tiles should also be filled with crushed rock and covered with a screen.
- The area between the trunk and the well wall should be covered by an iron grate or filled with a 50-50 mixture of crushed charcoal and sand to prevent anyone from falling into the well or to prevent leaves, debris, rodents, or mosquitoes from accumulating.
- One-half of these systems may be constructed if the grade is being raised on only one side of the tree(s).

Trenching and Tunneling

- Trenches should be built as far away from tree trunks as possible, at a minimum outside of the drip line, to reduce the amount of root damage. Those trenches built should avoid large roots or root concentrations by curving the trench or by tunneling under large roots and concentrated root areas. Tunneling is more expensive at first, but results in less soil disturbance and impacts of the root system; this cost may offset the cost of tree removal and replacement if the tree should die. Therefore, tunneling is

Preservation of Existing Vegetation

nearly always preferable over trenching.

- The tunnel should be at least 450 mm (18 in) below the ground surface, and not below the tree center to minimize impact on the roots.
- Roots should not be left exposed to air; they should be covered with soil as soon as possible, protected, and kept moistened with wet burlap or peat moss until the tunnel can be built.
- The ends of damaged or cut roots should be cut off smoothly and protected by painting them with a tree-wound dressing.
- Trenches and tunnels should be filled as soon as possible. Careful filling and tamping will eliminate air spaces in the soil.
- To induce and develop root growth, peat moss should be added to the fill material.
- The tree should be mulched and fertilized to conserve moisture, and to stimulate new root growth.
- Remove any trees intended for retention if those trees are damaged seriously enough to affect their survival. If replacement is desired, the new tree should be of similar species, and of at least 50 mm (2 in) caliper.

Maintenance and Inspection

- During construction, the limits of disturbance should remain clearly marked at all times. The contractor should be required to maintain existing vegetation in conformance with the requirements of the contract. Because protected trees may be destroyed by carelessness during the final cleanup and landscaping, fences and barriers should be removed last, after all other cleanup.
- If damage to protected trees still occurs, maintenance guidelines described below should be followed:
- Soil that has been compacted over a tree's root zone should be aerated by punching holes 300 mm (12 in) deep with an iron bar, possibly #4 rebar, and moving the bar back and forth until the soil is loosened. Holes should be placed 450 mm (18 in) apart throughout the area of compacted soil under the tree crown.
- Any damage to the crown, trunk, or root system of a retained tree during maintenance should be repaired immediately.
- Damaged roots should be immediately cut clean, and moist soil or soil amendments shall be placed around the cut root.
- If bark damage occurs, all loosened bark should be cut back into the

Preservation of Existing Vegetation

undamaged area, with the cut tapered at the top and bottom, and drainage provided at the base of the wood. Cutting of the undamaged area should be as limited as is possible.

- Serious tree injuries should be attended to by an arborist.